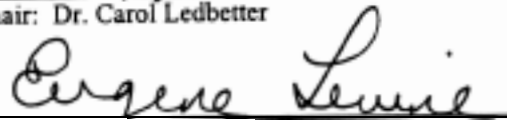



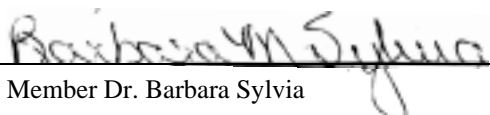
THE CURRENT PRACTICES IN INJURY PREVENTION AND SAFETY  
HELMET USE IN AN AIR FORCE MEDICAL CENTER

Barbara A. Tuitele

APPROVED:

11 Feb 2000  
Chair: Dr. Carol Ledbetter Date

9 March 2000  
Member:  Eugene Levine Date

9 March 2000  
Member Dr. Barbara Sylvia Date

APPROVED:

5-30-00  
F.G. Abdellah, Ed.D., Sc.D., RN, FAAN Date

## DISCLAIMER STATEMENT

Department of Defense

This work was supported by the Uniformed Services University of the Health Sciences Protocol No. T061AK-01. The opinions or assertions contained herein are the private opinions of the author and not to be construed as official or reflecting the view of the Department of Defense or the Uniformed Services University of the Health Sciences.

## COPYRIGHT STATEMENT

The author hereby certifies that the use of any copyrighted material in the thesis entitled:

THE CURRENT PRACTICES IN INJURY PREVENTION AND SAFETY  
HELMET

USE IN AN AIR FORCE MEDICAL CENTER beyond brief excerpts is with

permission of the copyright owner, and will save and hold harmless the Uniformed

Services University of the Health Sciences from any damage which may arise from such

copyright violations.

## ABSTRACT

Studies show that motorcycle and bicycle helmets reduce injuries and fatalities and lower health care costs. A Department of Defense (DoD) survey conducted in 1995 found that helmet use among active duty military motorcyclists and bicyclists was below the standards set by Healthy People 2000 objectives. In the United States, head injuries are the primary cause of death for both motorcycle crashes (3,500 death per year) and bicycle crashes (900 deaths per year). In addition, approximately one half of rollerblading deaths are due to head injuries. Head injuries account for more than 50,000 deaths annually and the same number of head injury victims are left with disabilities each year. Given these alarming statistics, this researcher wanted to know what primary care providers in the Air Force are doing to educate there patients on head injury prevention. The purpose of this descriptive study was to examine safety helmet use and the current practices in head injury prevention in an Air Force Medical Center. There were a total of 65 active duty members that had diagnosis codes identifying them as having been treated for a head injury at Malcom Grow between January 1, 1998 and November 30, 1999. Of these 65 individuals, data was available for review on 55 of these 65 individuals. The findings from this data was unexpected. Only one of these 55 individuals received head injury in which a helmet is required or recommended. Most head injuries that involved a sport were sustained while playing basketball, football or baseball. Most common head injuries that did not involve a sport were sustained as a result of a fight or assault, or in a motor vehicle accident.

Key words: **head injury prevention, Healthy People 2000**

THE CURRENT PRACTICES IN  
INJURY PREVENTION AND SAFETY HELMET USE  
IN AN AIR FORCE MEDICAL CENTER

by

Barbara Ann Tuitele, MSN

THESIS

Presented to the Graduate School of Nursing Faculty of  
the Uniformed Services University of the Health  
Sciences in Partial Fulfillment of the  
Requirements for the Degree of

MASTER OF SCIENCE

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

MAY 2000

## PREFACE

This study was conducted to determine the head injury prevention practices among primary care providers at an Air Force Medical Center. It was designed to familiarized those who read it with the importance of education on head injury prevention, when appropriate, in primary care practice.

## DEDICATION

To my parents, William and Betty (Currier); my brother, Kenneth (Currier); my children, Matthew and Travis; and my close friends, for all their love, encouragement and support.

## TABLE OF CONTENTS

<b>PREFACE.....</b>	<b>viii</b>
<b>DEDICATION.....</b>	<b>ix</b>
<b>LIST OF TABLES.....</b>	<b>xii</b>
<b>CHAPTER I: INTRODUCTION.....</b>	<b>1</b>
Background.....	1
Purpose of Study.....	4
Research Question.....	5
Conceptual Framework.....	6
Definition of Relevant Terms.....	7
Assumptions.....	10
Limitation.....	10
<b>CHAPTER II: LITERATURE REVIEW.....</b>	<b>11</b>
Introduction.....	11
Statistics on Unintentional Injuries.....	11
Recommendations for Preventive Counseling.....	16
Recommendations for the use of Protective Headgear.....	20
Summary of Literature Review.....	22
<b>CHAPTER III: METHODOLOGY.....</b>	<b>25</b>
Research Design.....	25
Sampling and Setting.....	25



Data Collection Process.....	27
Measurement Methods.....	28
Protection of Human Subjects.....	30
Plan for Data Analysis.....	30
 <b>CHAPTER IV: DATA ANALYSIS</b>	
Data Analysis.....	31
Summary of Data Analysis.....	36
 <b>CHAPTER V: RECOMMENDATIONS AND CONCLUSIONS</b>	
Introduction.....	38
Discussion of Findings.....	39
Limitations.....	40
Implications for Practice.....	40
Conclusions.....	41
Implications for Future Research.....	41
<b>REFERENCES.....</b>	<b>42</b>
<b>APPENDICES.....</b>	<b>45</b>
Appendix A: USUHS IRB Approval	
Appendix B: Malcom Grow Medical Center, Andrews AFB, MD Approval	
Appendix C: Chart Review Checklist	

## **LIST OF TABLES**

Table 1. Ages of Head Injured Patients.....	32
Table 2. Diagnosis Code for Head Injured Patients.....	34
Table 3. Method of Head Injury Among Active Duty Subjects.....	35

## CHAPTER I: INTRODUCTION

### Background

Healthy People 2000 (Office of Disease Prevention and Health Promotion, 1992) is a national initiative to improve the health of Americans through prevention. The overall goals of the initiative include: increase the span of healthy life, reduce health disparities among Americans, and achieve access to preventative services. The focus of this research was on Healthy People 2000 priority area nine: Unintentional Injuries/Injury prevention and control (Center for Disease Control and Prevention (CDC) 1998).

Unintentional injuries are the leading cause of death in the United States and the leading cause of death among persons age 1 to 44 years (ODPHP, 1998a, p. 388).

Among unintentional injuries that occur, head injury is known to have significant morbidity and mortality. Head injuries account for more than 50,000 deaths annually or one-third of all trauma related deaths. In addition, 50,000 to 60,000 head injury victims are left with disabilities each year. Riders of bicycles and motorcycles are especially at risk for head injuries (Mock, Maier, Boyle, Pilcher, & Rivera, 1995, p. 29). Head injuries are the primary cause of death for both motorcycle crashes (3,500 death per year) and bicycle crashes (900 deaths per year).

Education and primary prevention are important strategies for reducing the morbidity and mortality of head injury. In addition to attempts to reduce head injury through

educational campaigns and helmet legislation, primary care providers are in a position to educate their patients on a variety of health risks and preventive measures, including counseling of patients on head injury prevention. Unfortunately, clinicians and patients often view injury prevention as outside the domain of ambulatory clinical practice. The belief that injuries are unrelated to clinical practice is inaccurate. For many years, the public and physicians regarded injuries as a social problem to be addressed by legislators, engineers, product manufacturers, and employers. The fact is that injuries are the second most common cause of patient visits to physicians, accounting for 114 million physician contacts annually. Injuries generate one out of four visits to an emergency room and are the leading cause of hospitalization for persons under age 45 (Woolf, Jonas, & Lawrence, 1996).

The belief that patients are less endangered by injuries than by serious medical problems such as prostate cancer, leukemia, acquired immunodeficiency syndrome (AIDS) is inaccurate. More persons die each year in the United States from motor vehicle injuries than from prostate cancer, AIDS, or leukemia. In fact, among persons 1-34 years of age, injuries account for more deaths each year than all other causes combined. Primary care providers cannot ignore the effect of injuries upon the health of their patients. Injury prevention counseling must be tailored to the most likely injury risks facing the individual (Woolf et al., 1996).

Expert opinion suggests that many patients could benefit from counseling to modify their injury prone behaviors. The U.S. Department of Health and Human Services

(ODPHP, 1998a) recommends that primary care providers make safety counseling an integral part of their practice. It is recommended that questions about safety issues be asked on screening questionnaires, that significant issues be entered on the patients problem list, and that any counseling interventions should be documented.

In 1995 the Department of Defense (DoD) conducted a Survey of Health Related Behaviors Among Military Personnel to develop baseline estimates to measure progress towards meeting Healthy People 2000 objectives. The survey found that helmet use among motorcyclists and bicyclists was not meeting Healthy People 2000 (CDC,1998) standards. Among active-duty members who rode motorcycles in the past 12 months, approximately 70% wore helmets always or nearly always. This rate was lower than the Healthy People 2000 objective of increasing helmet use to at least 80% of motorcyclists. Among bicyclists in the past 12 months, rates of regular helmet use (i.e. always or nearly always) were all below 50%, the Healthy People 2000 objective. Approximately one in five (22.8%) who rode a bicycle in the past 12 months wore a helmet when they rode their bicycle (DoD, 1995). No data were collected for helmet use among roller-bladers or for those who engage in other high speed sports.

The military strives to maintain readiness for active duty soldiers. The Survey on Health Related Behaviors Among Military Personnel (DoD, 1995) found that approximately 3,400 active duty personnel per 100,000 were hospitalized for treatment of an injury in the 12 months previous to the study. This number was 4.5 times higher than the Healthy People 2000 target of 757 per 100,000 people.

Injuries create problems in lost productivity and unavailability of the military member to deploy. The purpose of military medicine was described in the following statement by Dr. James Zimble, President of the Uniformed Services University of Health Sciences (1996),

The main purpose of medical support is to conserve combat power. Chief among the common features of modern military medicine is an emphasis on prevention. It is essential that the military medicine expert's focus be on disease prevention and health promotion anywhere that troops might be deployed. Military medicine involves prevention, diagnosis, and treatment by medical personnel who are integrated into the operation they support.

#### Purpose of Study

The purpose of this study was to examine the current practices in injury prevention among Air Force healthcare providers when counseling individuals that have received a head injury. This study focused specifically on head injuries in which the DoD has specific recommendations or requirements for the use of safety helmets, which include motorcycling, bicycling, roller-blading and skateboarding. Findings from the DoD survey (1995) suggest that additional effort is necessary to meet Healthy People 2000 objectives in the area of helmet use. Prevention of unintentional injuries, caused by not using a safety helmet, will keep our active duty force ready to perform their mission when needed.

Research Question

This study posed the following research question: What are the current practices in injury prevention counseling among providers in an Air Force Medical Center when treating active duty outpatients that have received a sports related head injury?

This research question was to be answered by addressing the following specific questions :

1. What sports related activity was the individual involved in when he or she received the head injury?
2. Was the individual wearing a safety helmet when the head injury occurred?
3. Is there documentation of Injury Prevention counseling in the outpatient record of the head injured patient?
4. In which outpatient setting did injury prevention counseling occur?
5. What type of provider (RN, APN, PA, MD, DO) documented that injury prevention counseling was discussed with the head injured patient?
6. What was the age of the individual when the head injury occurred?
7. When did the head injury occur?
8. How many opportunities for counseling on injury prevention did the provider have with the head injured patient after the head injury occurred?

### Conceptual Framework

The concepts and theoretical assertions of the Neuman Systems Model provided the theoretical framework for this study (Cross, 1990). Neuman's total person approach to health care is congruent with today's health care philosophies. The Neuman model represents a focus on the total person approach to the interaction of environment and health. In essence, Neuman postulates viewing the person's perception of the stressors affecting the parts of the whole individual in constant interaction with the environment. Her theory is multidimensional and can be used to describe an individual, a group, or an entire community. For this reason, it is more than a nursing model and can be applied as a health care model, applicable to all health care disciplines.

Among the major concepts defined in Neuman's model is the emphasis on prevention as intervention. Neuman defines interventions as purposeful actions to help the client retain and/or maintain system stability. Neuman promotes beginning intervention when a stressor is either suspected or identified. Interventions are based on possible degree of reaction, resources, goals and the desired outcome. A significant attribute of the Neuman model is the assessment/intervention instrument in which she defines three levels of intervention—primary, secondary and tertiary. Neuman links the four essential concepts of person, environment, health and nursing in her descriptions of primary, secondary and tertiary prevention (Harris, Hermiz, Meininger, & Steinkeler, 1989).

Primary care providers assess, diagnose, plan, intervene and evaluate patient problems and their stressors. It is within the scope of the Healthy People 2000 Objectives



(ODPHP, 1992) and the Put Prevention Into Practice (ODPHP, 1998a) doctrine that health care providers intervene to promote healthy behaviors. Focusing on primary prevention to strengthen a client's line of defense prior to the impact of a stressor (i.e. head injury) can be done by reducing the intensity of the stressor (i.e. head injury) through adequate preventative counseling on helmet use. Neuman's model is congruent with the military's emphasis on health promotion and prevention and provided a strong framework to support this research.

### Definition of Relevant Terms

#### Head injured patient

An individual that received an injury to the head as a result of a sports related activity. For the purpose of this study, a head injured patient was an active duty military member who received a sports related head injury between 1 Jan 98 and 30 Nov 99 that was listed under one or more of the following ICD codes: 800-804 (skull/facial fracture), 850 (concussion), 851 (cerebral laceration or contusion), 852 (subarachnoid, subdural and extradural hematoma), 853 (other unspecified intracranial hemorrhage, 854 (intracranial injury)

#### Injury Prevention counseling

Any discussion with the patient that recommended modification of injury prone behaviors. For the purpose of this study, documentation that injury prevention counseling occurred during an outpatient visit with a patient meant that the patient was counseled to wear a safety helmet and protective gear.

Opportunities for counseling

Describes any visit to an outpatient setting in which a provider has an opportunity to discuss prevention with the outpatient. For the purpose this study, opportunities for counseling were any documented visits to the outpatient setting by the head injured patient between January 1, 1999 and November 30, 1999.

Outpatient record

Transcript of information obtained from a patient and presented in written form. It may contain medical history, diagnoses, treatment, prognosis, etc. The record may contain a list of patient problems and flow charts determining diagnostic and therapeutic plans and indicating what has been done. For the purpose of this study, the patient medical record was defined as the outpatient chart of a head injured patient.

Outpatient setting

A setting in which basic or general health care is provided at the person's first contact with the Air Force Health care system. For the purpose of this study, the outpatient setting included the following: a) Emergency Room, b) all Primary Care Clinics, and the c) Family Practice Clinic at Malcom Grow Medical Center, Andrews Air Force Base, Maryland.

Preventive counseling

Preventing the occurrence of both mental and physical illness and disease. Includes general promotion of health and specific protection. For the purpose of this study, preventive counseling was defined as documentation that the head injury patient was

counseled to wear a safety helmet when riding a bicycle, motorcycle, rollerblading or skateboarding.

#### Primary care provider

A family or individual goes to a primary care provider initially for medical care and the management of their care. The primary care provider assumes ongoing responsibility for health maintenance and therapy for illness, including consultation with specialists.

For the purpose of this study, the Air Force primary care provider was defined as an Advanced Practice Nurse (APN), Physician's Assistant (PA) or a Medical Doctor (M.D.), Doctor of Osteopathy (D.O.), or Registered Nurse (R.N.).

#### Safety helmet

For the purpose of this study, the safety helmet was defined as those helmets that the primary care provider should counsel the patient to wear. This included those helmets approved by the American National Standards Institute, the Snell Memorial Foundation, the American Society for Testing and Materials, or consumer Product Safety Commission.

#### Sports-related head injury

An injury that occurred while engaging in a sport related activity. For the purpose of this study, a sports-related head injury was considered a head injury that occurred while the subject was riding either a bicycle, motorcycle, rollerblading or skateboarding.

### Unintentional injury

An injury received in an unexpected, unforeseen or inadvertent circumstance. For the purpose of this study a sports related head injury was considered an unintentional injury.

### Assumptions

1. Preventive health care counseling has been conducted by Air Force Primary care providers.
2. Preventive counseling was documented in patient s medical records.
3. Preventive counseling has been an effective way to decrease high-risk behavior and reduce premature disability and death.
4. When the health care provider documented Injury Prevention counseling during a visit with a patient that received a head injury, this counseling included safety helmet use and the use of protective gear.

### Limitation

Most primary care providers counseled patients on unintentional injuries (i.e. the importance of the use of helmets) but they did not document this counseling.

## CHAPTER II: LITERATURE REVIEW

Introduction

Three major themes emerged in the literature which were necessary to support the importance of this study. First, this chapter examines the statistics on unintentional injuries and head injuries. Next, recommendations for preventative counseling in primary care practice will be discussed. Finally, the recommendations for the use of protective headgear will be discussed as well as the requirements for helmet use both nation wide and on U.S. Air Force installations.

Statistics on Unintentional Injuries

Baker (1998) highlights the problem of injuries by stating, Although the number of years of life lost prematurely to injury exceeded the number lost to cancer and heart disease combined, federal funding for injury research was only one fifth of the funding for the latter two diseases (p. 4).

He provides the following data:

1. Each year, more that 140,000 Americans die from injuries, and one person in three suffers from an non-fatal injury.
2. Injury is the last major plague of the young. Injuries kill more Americans aged 34 than all disease combined, and they are the leading cause of death up to age 44.
3. Injuries cause the loss of more working years of life than all forms of cancer and heart disease combined.

4. One in eight hospital beds is occupied by an injured patient.
5. Every year, more than 80,000 people in the United States join the ranks of those with unnecessary, but permanently disabling injury of the brain or spinal cord.

Injury is the leading cause of lost potential years of life in the United States (Robertson, 1998, p. 3). Cardiovascular disease and cancer kill more people than injury. However, most who die from those diseases are elderly and have far fewer potential years left than the fatally injured. Injury deaths are most prominent at ages 15 to 24, when they cause 78 percent of all deaths. Among the fatally injured in 1985, the average potential life remaining was 36 years compared to 12 years among those who died of cancer (Robertson, 1992, p. 3).

Wearing a helmet clearly does not prevent a crash. However, when a crash occurs, the freedom to ride unhelmeted is paid for in different ways. The injured pays and the public pays through taxes, insurance rates, and health care costs. Head injuries constitute one of our most expensive health problems. The costs, including direct medical care and rehabilitation, lost income and productivity, are estimated at more than \$224 billion annually (ODPHP, 1998a). Unhelmeted motorcycle riders cost more to treat at the hospital, spend a longer time in rehabilitation, and are more likely to require some form of public assistance to pay for their treatment. Not surprisingly, it is also expensive to treat bicycle-related head injuries because these injuries can endure throughout a lifetime.

Every \$10 bike helmet saves this country \$30 in direct health costs, and an additional \$365 in societal costs. In fact, if 85 percent of all child bicyclists wore helmets every

time they rode a bicycle for a year, the lifetime medical cost savings would total \$109 to \$142 million (National Highway Traffic Safety Administration (NHTSA), 1999, p. 3).

The DoD Survey of Health Related Behaviors (1995) found that approximately 3,400 active-duty personnel per 100,000 had been hospitalized in the past 12 months for treatment of and injury. This rate was about 4.5 times higher than the Healthy People 2000 objective of reducing injuries requiring hospitalization to no more than 754 per 100,000 persons. Rates of hospitalizations for injuries for those in the Air Force were 2,291 per 100,000 active duty service members. Those in pay grades E1-E3 had the highest rates of hospitalized injuries (3,989 per 100,000), whereas those in grades E4-E6 had the lowest rates of hospitalized injuries (2,149 per 100,000).

In the United States, there are 67 million bicyclists. Not only is bicycling is one of the most popular forms of recreational activities in the U.S., it is also an increasingly popular form of transportation. In addition, teenagers spend a large amount of time riding their bicycle. However, even with increasing focus on safety and prevention, teenagers are the hardest group to reach in developing and implementing safe bicycling practices (NHTSA, 1999).

The number of bicyclists who wear helmets is increasing, but not enough. Less than 20% of bicyclists report wearing helmets, and helmet use among teen riders is extremely low (NHTSA, 1999). Annually, there are approximately 500,000 bicycle related injuries treated in hospital emergency rooms in the United States, and approximately 900 deaths. Head injuries comprise one-third of injuries treated in emergency rooms, two-thirds of

hospitalizations, and three fourths of bicycle deaths. Collisions with a motor vehicle are responsible for approximately one-third of all bicycle related brain injuries and 90% of bicycle fatalities. In terms of serious morbidity, mortality, and long-term disability, head injuries are a major problem in bicycle-related trauma (Rivara, Thompson, Patterson, & Thompson, 1998, p. 294).

Among a majority of bicyclists killed, the most serious injuries are head injuries. Death rates from head injuries have been shown to be twice as high among cyclists in states with no helmet laws or laws that apply only to young riders, compared with States where laws apply to all riders (ODPHP, 1998b).

As would be expected, serious head injury is common among fatally injured motorcyclists. Motorcycles are less visible than cars and they have high performance capabilities. In addition, when motorcyclists crash, the rider lacks the protection of a closed vehicle and is therefore more likely to be injured or killed. (ODPHP, 1998b).

Helmets are about 29 percent effective in preventing motorcycle deaths and about 67 percent effective in preventing brain injuries. An unhelmeted rider is 40 percent more likely to suffer a fatal head injury, compared with a helmeted rider (ODPHP, 1998c). In states requiring motorcyclists to wear helmets, use approaches 100 percent compared with about 50 percent in states with partial or no laws.

Regarding in-line skaters, the hand and wrist region are the most common location for impact after falling. This make the use of wrist guards, knee and elbow pads extremely important. However, helmets are important to skaters who can reach high speeds, who



travel on downhill stretches and have much less efficient brakes or who skate in traffic with automobiles. Approximately one half of in-line skating deaths are due to head injuries (Young & Seth, 1998).

The facts are clear, case control studies consistently find that helmets are very effective in preventing head and brain injuries. Bicycle helmets decrease the risk of head injury by 85% and brain injury by 88%, making the use of helmets the single most effective way to reduce head injuries and fatalities resulting from bicycle crashes, (Rivera et al, 1998). Helmeted riders have a 73 percent lower fatality rate than unhelmeted riders. In addition, helmeted riders have up to an 85 percent reduced incidence of severe injuries than unhelmeted riders (NHTSA, 1999). The protective effect of helmets is present for riders of all ages, and appears to offer as much protection in crashes involving motor vehicles as it does crashes without motor vehicle involvement (Rivera et. al, 1998, p. 295).

Findings from the DoD Survey of Health Related Behaviors among active duty personnel suggest that additional effort is needed to meet Healthy People 2000 objectives in the area of helmet use among motorcyclists and bicyclists. Among bicyclists in the past 12 months, rates of regular helmet use (always or nearly always) were considerably below 50%, the Healthy People 2000 objective (DoD, 1995, p. 6). Among active duty Air Force personnel, 78% of respondents reported wearing motorcycle helmets always or nearly always when riding a motorcycle. Among active duty Air Force personnel, 23% of respondents reported wearing a helmet when riding a bicycle. There were no data

collected for helmet use among in-line skaters, skateboarders or for those who engage in high-speed sports.

### Recommendations for Preventive Counseling

Redman (1996) summarized conclusively in more than 25 meta-analyses that patient education can contribute significantly to positive health care outcomes. Fries, Koop and Beadle (1993) postulate that health promotion and disease prevention provide the opportunity to effectively and economically improve the health and well being of our nation. Health education leads to a decrease in high-risk behavior and a reduction in premature disability and death. It simply makes sense to prevent disease, screen for treatable problems before they become serious, and to encourage a healthy lifestyle to prevent and/or delay the onset of chronic disease and the aging process.

Despite evidence that a variety of clinical preventive services can delay or avoid many of the leading causes of death and disability, the Office of Disease Prevention and Health Promotion (ODPHP) (1998c) writes that significant barriers remain. Among patients, barriers to engaging in preventative behaviors include: (a) lack of knowledge or motivation, (b) anxiety about procedures and possible results, (c ) costs, (d) inconvenience, and (e) unrealistic expectations (leading to the overuse of some preventive services). Among clinicians, barriers to prevention include: (a) lack of training in preventive services, (b) lack of self-efficacy, or confidence that prevention interventions work, ( c) lack of time in the face of competing demands, (d) confusion over conflicting recommendations, (e) lack of knowledge about new tests, (f) inadequate reimbursement

for preventive services, (g) liability concerns, and (h) patient demand and expectation. In clinics and other health care settings, barriers to prevention include: (a) lack of knowledge, motivation, readiness for change, or support among office staff members, (b) clinical emphasis on curing illness and injury rather than prevention, and (c ) inadequate systems for tracking, monitoring, and following up on the delivery of preventive services (p. 3-4).

The Office of Disease Prevention and Health Promotion created PPIP in 1994 for the purpose of expanding the use of clinical preventive services such as screening, immunizations, and counseling. According to the PPIP Adult Preventative Care timeline, preventative screenings are to be done periodically for ages 18-75 on the following topics: tobacco cessation, drug and alcohol use, sexually transmitted diseases and HIV, family planning, domestic violence, unintentional injuries, seat belt use, nutrition, physical activity, fall prevention and polypharmacy (elderly). Upper age limits should be individualized for each person. (ODPHP, 1998c).

The United States Air Force has been using PPIP materials since 1994. In particular, Air Force healthcare providers use the waiting room poster, Adult and Child Preventive Care timelines, and the pocket-sized Personal Health Guide and Child Health Guide to stimulate discussions with clients about recommended prevention screenings. The timeline posters are supposed to be displayed in the examination room of every primary care clinic with the hope that it will prompt the patient to discuss any of the screening recommendations with their provider. Patients can easily review the screening

recommendations and discuss with their providers which screenings should be included as part of their current or future appointments. Air Force healthcare providers have found the Health Guides , both adult and child, to be excellent discussion tools for health educators as part of a client s health risk assessment. The guides allow clients to actively participate in their own care by documenting the results of their screenings and future preventive care needs (ODPHP, 1998c).

Most clinicians acknowledge the importance of incorporating preventive care into their practices; however, delivery of preventive services, even those about which all authorities agree, is far from satisfactory (ODPHP, 1998a, p. xxxviii). Diamond and Macciocchi (1998) studied whether primary care physicians provide education and counseling on head injury prevention as part of their routine health care discussions with patients. A preventative health care practices survey was distributed to 678 internal medicine physicians, family medicine physicians and pediatricians in central Virginia. Fifty-one percent (51%) of those surveyed responded. While ninety-five percent (95%) of physicians reported providing health care counseling in most cases or commonly , less than half (46%) of the physicians summarized head injury prevention with their patients. In contrast, 85% or more of the respondents discussed smoking, nutrition and exercise, heart disease and cancer as their focus of preventative counseling. Diamond and Macciocchi (1998) concluded that preventative counseling for head injury is discussed much less frequently than other health risks. The U.S. Department of Health and Human Services (ODPHP, 1998b), in it s Healthy People 2010 Objectives states that:

The opportunities for physician intervention in unintentional injury prevention are enormous. Although behavioral risk factor counseling from a variety of sources is beneficial, patients continue to view physicians as the most credible source of information. Yet physicians do not always seize the opportunity to counsel patients about the prevention of unintentional injuries (p.7-20).

Interventions that address patients' personal health practices are vitally important (ODPHP, 1998b, p. xxiv). Behavioral choice is critical to most of the identifiable contributors to premature death. Healthcare providers need to be familiar with the recommendations for counseling patients on behaviors that lead to improved personal health practices. Recommendations of the major authorities on counseling for unintentional injuries include the following: The American Academy of Family Physicians recommends that health care professionals should counsel patients on unintentional injury prevention, including, as appropriate, child safety seats, lap and shoulder belt use, bicycle safety, motorcycle helmet use, smoke detectors, poison control center numbers, and driving while intoxicated (ODPHP, 1998a, p. 389). Similarly, the American College of Obstetricians and Gynecologists recommends that injury prevention be a part of the evaluation and counseling portions of the periodic examination of women of all ages, with particular attention to safety belts and safety helmets, firearms, recreational and occupational hazards, and sports involvement (ODPHP, 1998a, p. 389). PPIP guidelines recommend that providers, Counsel all patients to wear safety helmets

while operating or riding motorcycles or bicycles and to wear mouth guards when playing contact sports (ODPHP, 1998a p. 392).

The military strives to maintain a readiness for active duty soldiers. Prevention of injury, specifically head injury, will prevent lost productivity and reduce unavailability of the active duty member to perform his or her mission.

#### Recommendations for the use of Protective Headgear

Recommendations for the prevention of head injuries are commonsense: PPIP guidelines recommend that, A safety helmet approved by the American National Standards Institute (ANSI), Snell Memorial Foundation, or the American Society for Testing Materials (ASTM) should be worn by all persons every time they ride or are a passenger on a bicycle. Helmets should also be worn while using roller skates, in-line skates, and skateboards (ODPHP, 1998a, p. 152).

The United States Department of Transportation s National Highway Traffic Safety Administration supports the enactment of bicycle helmet usage laws (NHTSA, 1999). Bicycle helmets protect bicyclists for head injuries resulting from bicycle crashes, and bicycle helmet laws have been proven effective in increasing bicycle helmet use. As of September 1997, 15 states have enacted age-specific bicycle helmet laws. Most of these laws cover bicyclists under age 16. The Department of Defense (DoD) advocates that bicycle safety will be emphasized throughout the DoD Components traffic safety program. Programs are required to emphasize the mandatory use of approved bicycle safety helmets by all personnel, including dependents, who ride bicycles on DoD

installations (DoD, 1999). Bicycle helmets are required by persons of all ages when riding a bicycle on any Air Force Base.

Less than half the states in the U.S. mandate helmet use by all motorcyclists. NHTSA provides a comparison of a state's motorcycle crash-related fatalities before and after enactment or repeal of a helmet law for all riders. The results are not surprising: When universal helmet laws are enacted, helmet use increases, and fatalities and serious injuries decrease. When these laws are repealed, helmet use decreases, and injuries and associated costs increase, far exceeding the number of new motorcycles registered (NHTSA, 1999, p. 1).

The requirements for motorcycle, motor scooter, and moped operations on and off DoD installations (includes on and off Air Force Bases) include the following:

Operator and any passenger must wear a protective helmet.

NOTE: Helmets must meet, as a minimum, Department of

Transportation (DoT) standards and be properly worn and fastened.

Helmets may also meet other standards such as the Snell Memorial

Foundation or the American National Standards Institute. If stationed

overseas, personnel may use host-nation certified, equivalent helmets

(Air Force Instruction 91-207, 1 October 1995).

In-line skate manufacturers acknowledge the need for persons to wear protective equipment. For example, the largest manufacturer of in-line skate, Stop and Go

Rollerblade, Inc., Minneapolis, MN, recommends that all skaters wear at least wrist

guards and a helmet and that freestyle skaters wear additional protective equipment (Young & Seth, 1998). The DoD or Air Force does not have specific guidelines addressing helmet use among persons who engage in rollerblading on an Air Force base. DoD guidelines applicable to in-line skaters address the use of earphones or headphones and pedestrian use of roadways. The guidelines state: The wearing of portable headphones, earphones or other listening devices while operating a motor vehicle and while bicycling, or skating on roads and streets on DoD installations is prohibited (DoD, 1999, p 4). In addition, DoD guidelines on pedestrian use of roadways (which also apply to in-line skaters) state: Individuals are not authorized to jog, run, or walk on roadways during high traffic density and peak traffic periods. Installation commanders shall designate which roadways and time periods that apply.

There are consequences for those active duty Air Force members who fail to follow the safety requirements established by the DoD and Air Force Regulations. If an active duty member is involved in an accident which stems from non-use of protective devices (such as wearing a helmet or a seat belt), they will be held liable for payment of all medical costs, ineligible for disability benefits and/or life insurance benefits in the case of death. This is called a line-of duty determination (DoD, 1999, p.1).

### Summary of Literature Review

The statistics on head injury as a result of not wearing a safety helmet speak for themselves. The bottom line is that helmets prevent brain injury. The data presented clearly illustrated that motorcycle and bicycle helmets reduce injuries and fatalities and



lower health care costs. It is true that wearing a helmet will not prevent a crash.

However, when a crash happens, the injured suffers and pays, the public pays through taxes, insurance rates and health care costs. That is why motorcyclists and bicyclists should wear helmets and why states, as well as the Department of Defense, need a helmet law that covers these riders.

The importance of preventing head injury through patient education and counseling was clearly described. Health education can lead to a decrease in high-risk behavior and a reduction in premature disability and death. The following organizations recommend that providers incorporate counseling for unintentional injury prevention: the Office of Disease Prevention and Health Promotion's PPIP guidelines for primary care providers, the United States Department of Health and Human Services Healthy People 2000 guidelines, the American Academy of Family Physicians, and the American College of Obstetricians and Gynecologists.

There are requirements and recommendations for the use of helmets by active duty personnel and all persons while on and off a Department of Defense installation. Department of Defense (1999) regulation requires all persons (military or civilian) that operate or are a passenger on a motorcycle on a DoD installation will wear a Department of Transportation approved helmet. All military persons operating or a passenger on a motorcycle off a DoD installation will also wear a helmet. In addition, the DoD requires that all personnel (including dependents) who ride bicycles on DoD installations will wear an approved bicycle helmet. There are recommendations, but no DoD or Air Force

requirements for helmet use among persons that engage in roller-blading, roller-skating and skateboarding. PPIP guidelines (ODPHP, 1998a) recommend that a helmet approved by the ANSI, Snell Memorial Foundation, or the ASTM should be worn by all persons every time they ride a motorcycle, bicycle, and while using roller-skates, in-line skates and skateboards.

The DoD Survey of Health Related Behaviors (1995) found that among Air Force bicyclists, rates of regular helmet use were 23%, considerably below 50%, the Healthy People 2000 objective. The survey also found that 78% of the Air Force respondents reported wearing helmets always or nearly always when riding a motorcycle. These findings, along with the statistics on head injuries and helmet use, strongly supported this study because they illustrated that additional effort is needed to promote helmet use in the Air Force.

## CHAPTER III: METHODOLOGY

Research Design

A descriptive design was used to examine the current practices in head injury prevention and counseling in an Air Force Medical Center. Active duty individuals aged 18 and older that received a head injury between January 1, 1998 and November 30, 1999 were identified using the appropriate diagnosis codes. Once identified as a head injury patient, a retrospective review of the individuals Emergency Treatment Record was done to determine how the head injury occurred. If the Emergency Treatment Record revealed that the individual received a head injury as a result of a motorcycle, bicycle, roller-blading or skateboarding injury, the outpatient record was reviewed further for documentation of preventative counseling on safety helmet use.

Sampling and Setting

The setting of this study was Malcom Grow Medical Center at Andrews Air Force Base, Maryland. The criterion for inclusion in the study was as follows:

1. The subject must have been an active duty military member whose outpatient record was filed at Malcom Grow Medical Center.
2. The subject must have received and been treated for a head injury in the outpatient setting at Malcom Grow Medical Center between January 1, 1998 and November 30, 1999. These dates were selected to examine if there has been any increase in injury prevention counseling following the Survey of Health Related Behaviors (1995). Results of this survey suggested that additional efforts were needed to

meet Health People 2000 objectives on helmet use among active duty members.

(DoD, 1995).

2. The subject must have been listed in the Composite Health Care System (CHCS) under one or more of the following diagnosis codes:

800-804 (skull or facial fracture)

850.1-850.9 (concussion)

851 (cerebral laceration and contusion)

852 (subarachnoid, subdural and extradural hematoma following injury)

853 (other and unspecified intracranial hemorrhage following injury)

854 (intracranial injury of other and unspecified nature)

These codes were selected because they identified head injured patients.

4. The subject must have been at least 18 years of age or older, of either sex, and any race. These age ranges were selected for the following reasons: a) Persons under 45 years of age are more likely to die from injuries than from any other cause (Woolf, et al., 1996). b) Active duty Air Force members in pay grades E1-E3 had the highest rates of hospitalized injuries (3,989 per 100,000) and the average age of persons in this pay grade are aged 18-24 (DoD, 1995), and because c) injury deaths are most prominent at ages 15 to 24, when they cause 78 percent of all deaths (Robertson, 1992).

5. The subject must have received the injury while motorcycling, bicycling, roller blading, roller-skating or skateboarding to be included in this study. These sports

were selected because the DoD and/or Air Force have specific requirements or recommendations for the use of a helmet when engaging in these activities.

### Data Collection Process

Permission to perform this research was obtained from the Institutional Review Board at the Uniformed Services University of the Health Sciences (Appendix A), and the Institutional Review Board Malcom Grow Medical Center (Appendix B). Data was collected using information obtained from the Medical Support Squadron at Malcom Grow Medical Center. An information/data request containing the inclusion criteria for this study was submitted to the Medical Support Squadron. A total of 65 individuals met the inclusion criteria. The list obtained from the Medical Support Squadron contained the patient name, social security number, age, date of treatment, the outpatient clinic in which the patient was seen, and the ICD code of the patient. Five of the individuals visited the Primary Care Clinic for their head injury, the remaining 60 individuals were seen in the Emergency Room. Since the majority of the individuals were treated in the Emergency Room, the Emergency Room Treatment Record was reviewed to assess how the head injury occurred. If the head injury was one that involved motorcycling, bicycling, roller-blading or skateboarding, the outpatient record was then going to be reviewed for subsequent visits to assess whether or not counseling on safety helmet use took place.

Measurement Methods

The Chart Review Checklist (Appendix C), was designed by this researcher for use as the measurement tool in this study. The Chart Review Checklist (Appendix C) was tested for content validity. Two Advance Practice Nurses were selected as experts to validate that the questions on the Chart Review Checklist (Appendix C) were appropriate, accurate and relevant to the purpose of the study. A content validity index (CVI), a procedure developed by Waltz and Bausell, was calculated using the following procedure (Burns & Grove, 1997). The degree of relevance of each question on the Chart Review Checklist (Appendix C) to the purpose of the study was evaluated by two Advance Practice Nurse experts using a 4-point rating scale. Options on this scale read: 1 = not relevant; 2 = unable to assess relevance without revision or item is in need of such revision that it would no longer be relevant; 3 = relevant but needs minor alteration; 4 = very relevant and succinct (Burns & Grove, 1997). All questions on the review checklist were scored as very relevant and succinct, resulting in a CVI of 1.0. No revisions or eliminations were made from the assessment tool. This researcher intended to test the Chart Review Checklist for intra-rater reliability but the checklist was never used in this study. This research did not have the opportunity to use the Chart Review Checklist because there were no charts available for review that met the inclusion criteria.

The purpose of the Chart Review Checklist (Appendix C) was to examine the current practices in head injury prevention and counseling among providers when treating active

duty outpatients that received a sports-related head injury. The Chart Review Checklist (Appendix C) consisted of seven questions. Question one of the Chart Review Checklist determined if the head injury was sports-related or not. If the head injury was not sports related, the chart review of that record was discontinued. If the head injury was sports related, the next part of question one specified if the sport was motorcycling, bicycling, roller-blading, roller-skating or skateboarding. The next question determined if this was a sport in which a helmet is required or recommended by the DoD or Air Force. Question two elicited the date the head injury occurred on. Question three asked if the individual was wearing a safety helmet when the head injury occurred. Question four elicited the age of the individual at the time the head injury occurred. Question five elicited the sex of the individual. Question six asked if there was documentation of Injury Prevention counseling during any of the outpatient visits between January 1, 1998 and November 30, 1999. If the answers to question six was yes, the next four parts of question six were answered. Question 6a elicited the number of visits that contained documentation on Injury Prevention counseling, question 6b elicited whether the counseling occurred before or after the head injury, question 6c elicited who did the counseling and question 6d elicited the type of outpatient setting in which the injury prevention counseling occurred. Question seven was designed to elicit how many opportunities the provider had for teaching about injury prevention with the head injury patient.

Protection of Human Subjects

Approval from the Institutional Review Board at Uniformed Services Health Science University (Appendix B) and at Malcom Grow Medical Center (Appendix C) were obtained. Patient confidentiality and provider confidentiality were maintained at all times. Access to the master list of the names and social security number of the head injury patients were limited to the researcher. No data identifying the name, social security number, rank, telephone number or address of the subject was listed on the checklist. The master list containing the name and social security number of the head injury patients was destroyed after data collection.

Plan for Data Analysis

Data was analyzed using the Statistical Package for the Social Sciences (SPSS) software program for personal computers. Data was summarized in frequency distributions and in means, medians and percentages. A discussion of the findings and their implications for practice is presented in Chapters Four and Five.



## CHAPTER IV: DATA ANALYSIS

Introduction

The purpose of this descriptive study was to examine the current practices in head injury prevention in an Air Force Medical Center. A total of 65 active duty members had codes identifying them as having been treated for a head injury at Malcom Grow between January 1, 1998 and November 30, 1999. Five of the subjects visited the Primary Care Clinic and 60 of the subjects visited the Emergency Room for their head injuries. None of the five outpatient records were available for review for the subjects who visited the Primary Care Clinic. Fifty-five of the Emergency Room Treatment Sheets were reviewed to assess whether or not the subjects' head injury was sports related. Only one of the 55 Emergency Room Treatment Records reviewed revealed that the subject was involved in an activity in which a safety helmet is recommended or required. Since the outpatient record of this subject was not available for review the Chart Review Checklist (Appendix C) was not used in this study.

This subject was a 30 year old female. The Emergency Room Treatment Record was reviewed and documentation revealed that she was riding her mountain bike when she fell and hit her face on a rock, sustaining a facial fracture. The subject was treated in the Emergency Room at Malcom Grow Medical Center by a physician in June of 1999. There was no documentation in the record stating the subject was or was not wearing a safety helmet when the injury occurred. In addition, there was no documentation that the

subject was counseled on injury prevention and safety helmet use during her visit in the Emergency Room.

The Emergency Room Treatment Record Sheet was reviewed on the 55 active duty members whose diagnosis codes indicated that they were treated for a head injury at Malcom Grow between January 1, 1998 and November 30, 1999. Eighteen percent of the subjects were female and 82% were male.

Table 1 shows the age ranges of the head injured patients. The majority of these patients were aged 20-29 (60%). The percentage of patients in each age category decreases as age increases. This suggests that younger persons are more at risk for head injuries than older persons.

**Table 1.**

**Ages of Head Injured Patients**

Age	Number	Percent
Less than 20	1	2
20-29	33	60
30-39	15	27
40-49	5	9
Greater than 50	1	2
Total	55	100

Head injuries occurred most often in the 20-29 age group. The finding that head injuries occur most frequently in the 20-29 age group is similar to that found in the Department of Defense (1995) survey. The survey found that the prevalence of injuries in all the services (Army, Navy, Marine Corps, Air Force) was highest among active duty members in pay grades E1-E3. Rates of injuries among Air Force members was also highest in pay grades E1-E3. The average age of persons in this pay grade are aged 18-24 (DoD, 1995).

Table 2 presents the ICD or diagnosis code of the head injured patients. A total of six ICD codes were used to identify head injuries. The majority (69%) of the subjects were listed under the somewhat all encompassing ICD code titled, intracranial injury of other and unspecified nature . The next largest group of subjects (20%) was under the ICD code for a skull or facial fracture . The remaining head injury patients (11%) were classified under the ICD code for concussion . There were no head injury patients identified under three of the codes listed in the inclusion criteria.

**Table 2****Diagnosis code for Head Injured Patients**

Diagnosis Code	Number	Percent
Intracranial Injury	38	69
Skull or facial fracture	11	20
Concussion	6	11
Cerebral laceration and contusion	0	0
Other and unspecified intracranial hemorrhage following injury	0	0
Intracranial injury of other and unspecified nature	0	0
Subarachnoid, subdural and extradural hematoma following injury	0	0
Total	55	100

Table 3 shows the various methods by which the active duty subjects sustained their head injury. The methods can be divided into two major categories, those involving a sport (25%) and those not involving a sport (75%).

**Table 3****Method of Head Injury Among Active Duty Subjects**

Method of Head Injury	Number	Percent
<u>Method of head injury involving a sport</u>	<u>13</u>	<u>25</u>
Basketball	6	11
Baseball	3	6
Football	2	4
Bicycling	1	2
Rugby	1	2
<u>Method of head injury not involving a sport</u>	<u>42</u>	<u>75</u>
Hit head on or by an object	12	22
Fight or Assault	9	15.5
Motor vehicle accident	8	15
Fall	4	7
Other	9	15.5
<b>Total</b>	<b>55</b>	<b>100</b>

The majority of head injuries involving a sport were sustained as the subjects participated in basketball, baseball or football. Only 2% of the head injuries were sustained while bicycling.

Head injuries not sustained from a sport had various causes. Most of the subjects either hit their heads on an object or received a blow to the head (22%). The second largest category of head injuries involved in a fight or an assault. The subjects had either fallen received a blow to their head or were struck in the head with an object while fighting or as a victim of an assault (17%). The third largest category (15%) of head injuries were sustained in a motor vehicle accident. Documentation revealed that one of the eight subjects in this category was not wearing a seat belt. The next most frequent cause of a non-sports related head injury was falls (7%), either because of accidentally slipping or tripping. Sixteen percent of the head injury patients did not have documentation describing how the head injury was sustained.

#### Summary of Data Analysis

In summary, a total of 65 active duty members had diagnosis codes identifying them as having been treated for a head injury at Malcom Grow between January 1, 1998 and November 30, 1999. Five of the subjects visited the Primary Care Clinic for their head injury and 60 of the subjects visited the Emergency Room for their head injury. None of the five outpatient records were available for review for the subjects that visited the Primary Care Clinic. Fifty-five of the Emergency Room Treatment Sheets were available

for review. Only one subject was identified as having had a head injury that involved an activity in which a safety helmet is recommended or required (motorcycling, bicycling, roller-blading or skateboarding). There was no documentation stating the subject was or was not wearing a safety helmet when the injury occurred. In addition, there was no documentation that the subject was counseled on injury prevention and safety helmet use during the visit in the Emergency Room. The most common head injuries that involved a sport were sustained while playing basketball, football or baseball. The most common head injuries that did not involve a sport were sustained by falling, in a fight or assault, or in a motor vehicle accident.

After initiating this study, this investigator learned of a study released in July 1999 by the Air Force Safety Council (AFSC) titled Summary of Sports and Recreation Injuries. This was a ten year retrospective study that examined the most common sports and recreation injuries among off-duty Air Force military members. Of the 102 activity options reported, the three most common sources of off-duty sports and recreation injuries identified by the AFSC were basketball (22.5%), softball (15%) and football (11.5%). Other sources included weight lifting (4.2%), volleyball (4.1%), bicycling (3.8), snow skiing (3.6%) and racquetball (3.4%). Interestingly, 49% of the reported injuries occurred in three (basketball, softball and football) of the 102 choices (AFSC, 1999).

Interestingly, this study confirms the AFSC (1999) results as it also found that the most common sports related head injuries were sustained while the individuals were participating in basketball, baseball or football.

## CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS

Introduction

In 1995, the Department of Defense conducted a survey that found that additional effort was needed to meet the Healthy People 2000 objective for helmet use among motorcyclists and bicyclists. Seventy percent of active-duty members who rode motorcycles reported wearing helmets always or nearly always. This rate was lower than the Healthy People 2000 objective of increasing helmet use to at least 80% of motorcyclists. Among bicyclists, rates of regular helmet use (i.e. always or nearly always) were well below 50%, the Healthy People 2000 objective. Only one in five (22.8%) active duty persons who rode their bicycle in the 12 months prior to the study reported wearing a helmet (DoD, 1995). No data were collected for helmet use among roller-bladers or for those who engage in other high speed sports.

Result of the DoD (1998) survey provided the foundation for this study. This investigator wanted to examine what primary care providers in the Air Force are doing to educate their patients on head injury prevention. The research question asked: What are the current practices in injury prevention counseling among providers in an Air Force Medical Center when treating active duty outpatients that have received a sports related head injury?



### Discussion of Findings

The findings of this study were unexpected. Only one documented head injury was found that occurred in a sport in which a safety helmet is required or recommended. However, it was discovered that the most common head injuries that involved a sport were sustained while playing basketball, football or baseball. These results support the study by the Air Force Safety Council (1999) in which 49% of reported injuries occurred in these three sports. The most common head injuries that did not involve a sport occurred in falls, fights or assaults or motor vehicle accidents.

The DoD (1995) survey illustrated that additional effort was needed to promote helmet use in the Air Force. This investigator found that the incidence of head injuries among sports in which the DoD either requires or recommends the use of a helmet (motorcycling, bicycling, roller-blading or skateboarding) was extremely low at Malcom Grow Medical Center.

While the study did not measure rates of helmet use among subjects who participate in motorcycling, bicycling, roller-blading or skateboarding, it does imply that progress has been made in helmet use among active duty members who engage in motorcycling and bicycling. Since there were no reported incidents of head injuries involving rollerblading or skateboarding, the implication is that participants in these activities were wearing protective head gear.

### Limitations

The findings of this study are subject to several limitations. The small sample of 55 subjects came from one medical center limiting generalizations to the total Air Force population. The greatest limitation this investigator encountered was in locating the outpatient records of the subjects. This investigator used the Emergency Room Treatment Sheets kept on file in the Outpatient Record department to evaluate the subjects. Outpatient records were not available for review for several reasons.

Outpatient records were either missing, signed out as being hand carried, or were unavailable for review because the individual had either had a permanent change of station or separated from active duty military status. Consequently, there was no opportunity to use the Chart Review Checklist. Finally, because of lack of records the reliability of the Chart Review Checklist could not be assessed.

### Implications for Practice

The primary care provider has enormous opportunities for preventative counseling. Missed opportunities for practicing prevention can be avoided by remaining abreast of the Clinician s Handbook of Preventive Services (ODPHP, 1998a) which provides practical information for developing and implementing a prevention plan tailored to the needs of primary care providers in a variety of settings. The primary care provider must seize the opportunity to counsel patients about the prevention of unintentional injuries when appropriate. They must include injury prevention as part of their routine health care

discussions with patients. Prevention of injury will enhance productivity and reduce unavailability of the active duty member to perform his or her mission.

### Conclusions

Results of this study are inconclusive as to whether or not primary care providers are counseling patients on head injury prevention. It is essential for the primary care provider's focus to be on health promotion and injury prevention as well as on disease prevention. Questions about safety issues need to be asked on screening questionnaires, significant issues need to be entered on the patient's problem list, and any counseling interventions should be documented. Primary care providers must continue to struggle to overcome barriers such as lack of training in preventive services and lack of time in the face of the competing demands to incorporate preventative care in their practices.

### Implications for Future Research

This was a non-experimental, descriptive study designed to examine the current practices in head injury prevention in an Air Force Medical Center. In retrospect, this research question may have been better answered by examining whether primary care providers in an Air Force Medical Center provide education and counseling on head injury prevention as part of their routine health care discussions with active duty members during their annual physical exam.

## REFERENCES

- Air Force Instruction (AFI) 91-207. (October 1, 1995). Andrews, AFB, MD
- Air Force Safety Council (AFSC). (1999). Summary of sports and recreation injuries. Available from the Andrews Air Force Base Safety Office. Andrews AFB, MD
- Baker, S. (1998). The United States experience: Injury in America. Injury Prevention, 14, 4-6.
- Burns, N. & Grove, S.K. (1997). The practice of nursing research: Conduct, critique and utilization (3<sup>rd</sup> ed.). Philadelphia: W.B. Saunders.
- Center for Disease Control and Prevention. (1998). Progress review. Unintentional injuries [Posted on the Healthy People 2000 web site]. Retrieved December 1, 1998 from the World Wide Web <http://odphp.osophs.dhhs.gov>.
- Cross, J. R. (1990). Betty Neuman. In J. B. George (Ed.), Nursing Theories. The base for professional nursing practice (pp. 259-277). Norwalk, Connecticut: Appleton & Lange.
- Department of Defense. (1995). Survey of health related behaviors among military personnel. [Posted on the Tricare web site]. Retrieved November 1, 1998 from the World Wide Web <http://www.tricare.osd.mil/cs/survey7.html>.
- Department of Defense. (1999). DoD traffic safety program. [Posted on the Washington Headquarters Services Directives and Records Branch website]. Retrieved February 24, 1999 from the World Wide Web <http://web7.whs.osd.mil>.

Diamond, P.T. & Macciocchi, S.N. (1998). Head injury. A survey of current practices in preventive health care counselling. Brain Injury, 12, 817-820.

Fries, J.F., Koop, E. & Beadle, C.E. (1993). The health project consortium: Reducing health care costs by reducing the need and demand for medical services. New England Journal of Medicine, 329, 321-325.

Harris, S.M., Hermiz, M.E., Meininger, M. & Steinkeler, S.E. (1989). In A. Marriner-Tomey (Ed.), Nursing theorists and their work (pp.361-388). St. Louis, MO: C.V. Mosby Company.

Mock, C.N., Maier, R.V., Boyle, E., Pilcher, S. & Rivara, F.P. (1995). Injury prevention strategies to promote helmet use decrease severe head injuries at a level I trauma center. The Journal of Trauma: Injury, Infection and Critical Care, 39, 29-33.

National Highway Traffic Safety Administration (NHTSA) (1999). State legislative fact sheet [Posted on the NHTSA web site]. Retrieved April 20, 1999 from the World Wide Web <http://www.nhtsa.dot.gov>

Office of Disease Prevention and Health Promotion (ODPHP) (1992). Healthy people 2000. Boston: Jones and Bartlett Publishers.

Office of Disease Prevention and Health Promotion (ODPHP) (1998a). Clinicians handbook of preventive services (2<sup>nd</sup> ed.). Washington D.C.: U.S. Government Printing Office.

Office of Disease Prevention and Health Promotion (ODPHP) (1998b). Healthy people 2010 objectives: Draft for public comment. Washington D.C.: U.S. Government Printing Office.

Office of Disease Prevention and Health Promotion (ODPHP) (1998c). Prevention report-spring 1998. [Posted on the PPIP web site]. Retrieved November 11, 1998 from the World Wide Web <http://odphp/dhhs.gov/pubs/preverpt/98sprp/98sprfoc.htm>.

Redman (1996). The practice of patient education. St. Louis: Mosby-Year Book.

Rivara, Thompson, Patterson & Thompson, (1998). Prevention of bicycle-related injuries. Annual Review of Public Health, 19, 293-318.

Robertson, L.S. (1992). Injury epidemiology. New York: Oxford Press

Woolf, S., Jonas, S. & Lawrence, R.S. (1996). Health promotion and disease prevention in clinical practice. Baltimore: Williams and Wilkins.

Young, C.C. & Seth, M.D. (1998). In-line skating: Use of protective equipment, falling patterns, and injuries. Clinicians journal of sport medicine, 8, 111-114.

Zimble, J. (1996). Richard A. Kern Lecture Award - Military medicine: An operational definition. Military Medicine, 161, 183-188.

## APPENDICES

Appendix A: USUHS IRB Approval

Appendix B: Malcom Grow Medical Center, Andrews AFB, MD Approval

Appendix C: Chart Review Checklist



UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES  
F. EDWARD HEBERT SCHOOL OF MEDICINE  
4301 JONES BRIDGE ROAD  
BETHESDA, MARYLAND 20814-4799



May 27, 1999

MEMORANDUM FOR BARBARA A. TUI TELE, GRADUATE SCHOOL OF NURSING

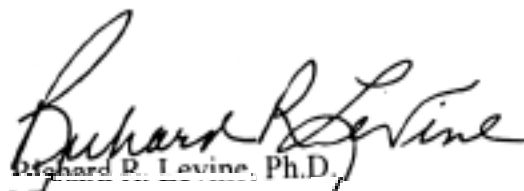
SUBJECT: IRB Approval of Protocol **T061AK-01** for Human Subject Use

Your research protocol entitled "*The Current Practice in Injury Prevention and Safety Helmet Use in an Air Force Medical Center,*" was reviewed and approved for execution on 5/27/99 as an exempt human subject use study under the provisions of 32 CFR 219.101 (b)(4), approval will be reported to the full IRB scheduled to meet on June 10, 1999.

The purpose of this study is to examine the current practices in head injury prevention in an Air Force Medical Center. This study will examine whether providers give education and counseling on safety helmet use as part of outpatient visits with individuals that have received a sports related head injury. Outpatient medical records of individuals that experienced a sports related head injury will be reviewed and information will be recorded regarding the type of injury prevention counseling provided. The IRB understands that no subject identifying information will be collected as part of this study.

**Please note that to complete the file for this protocol you are required to provide this office with a copy of Andrews Air Force Base approval for this study once it is received.**

Please notify this office of any amendments you wish to propose and of any untoward incidents which may occur in the conduct of this project. If you have any questions regarding human volunteers, please call me at 301-295-3303.

  
Richard P. Levine, Ph.D.  
LTC, MS, USA  
Director, Research Programs and  
Executive Secretary, IRB

Cc: Director, Grants Administration







DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 89TH AIRLIFT WING (AMC)

MEMORANDUM FOR Capt B. Tuitele

FROM: 89 MDG/SGH

SUBJECT: Approval of protocol FMG1999014E, "The Current Practices in Injury Prevention and Safety Helmet Use in an Air Force Medical Center"

1. The above mentioned protocol has been unanimously approved by the members of the Institutional Review Board (IRB) at Malcolm Grow Medical Center, Andrews AFB MD on 14 Jul 99. You may begin your study.
2. If collection and/or analysis of data for your study are to continue beyond one year, the IRB must perform a continuous (annual) review and provide written approval. Federal oversight agencies have found this to be a frequent source of problems during their audits. and have stated clearly that studies that have not received at least annual approval by the IRB of record must terminate activity immediately since they are no longer in compliance. **In order for ongoing human subject research studies to be reviewed, approved and processed by the IRB within this time constraint, a status report must be received by the IRB office within 90 days of the IRB approval anniversary date. Though we will attempt to assist you by sending you a reminder, this reporting requirement is your responsibility.**
3. Please -forward all required reports (progress, final) to this office. You must report any potentially hazardous findings to the IRB immediately upon recognition. Thank you.

  
RUTH A. ROBINSON, COL, USAF, MC  
89<sup>th</sup> MDG, Chief of Medical Staff

\_\_\_\_\_ ICD code

Appendix C  
Chart Review Checklist

1. Is head injury sports related?

\_\_\_\_\_ yes \_\_\_\_\_ no (if no, discontinue review of this record)

1a. If yes, specify sport: (if not a sport listed below, discontinue review of this record)

\_\_\_\_\_ motorcycle \_\_\_\_\_ bicycle \_\_\_\_\_ roller-blading \_\_\_\_\_ roller-skating  
\_\_\_\_\_ skateboarding

1b. Is this a sport in which a helmet is required or recommended ?

\_\_\_\_\_ required (motorcycle or bicycle)

\_\_\_\_\_ recommended (roller-blading, roller-skating, skateboarding)

2. What is the date that the head injury occurred? \_\_\_\_\_

3. Was individual wearing a safety helmet when the head injury occurred?

\_\_\_\_\_ yes \_\_\_\_\_ no \_\_\_\_\_ not documented

4. What was the age of the individual at the time the head injury occurred ?

\_\_\_\_\_

5. What is the sex of the individual? \_\_\_\_\_ male \_\_\_\_\_ female

6 Is there documentation of Injury Prevention counseling during any of the outpatient visits between 1 Jan 98 and 30 June 99 ?

\_\_\_\_\_ yes \_\_\_\_\_ no (If no, go to #7)

6a. If yes, what is the number of visits that contain documentation on Injury Prevention counseling? \_\_\_\_\_ 1-3 \_\_\_\_\_ 4-6 \_\_\_\_\_ 7-9 \_\_\_\_\_ 10 or more

6b. If yes, did the counseling occur before or after the head injury?

\_\_\_\_\_ before \_\_\_\_\_ after

6c. If yes, who did the counseling? (circle all that apply): APN PA MD DO

6d. If yes, in what outpatient setting did the injury prevention counseling occur? (List number

of times it occurred in each of the settings if there is more than one setting)

\_\_\_\_\_ primary care \_\_\_\_\_ emergency room \_\_\_\_\_ family practice

7. How many opportunities for counseling on injury prevention did the provider have with the head injured patient after the head injury occurred?

\_\_\_\_\_ 0-3 \_\_\_\_\_ 4-6 \_\_\_\_\_ 7-9 \_\_\_\_\_ 10 or more